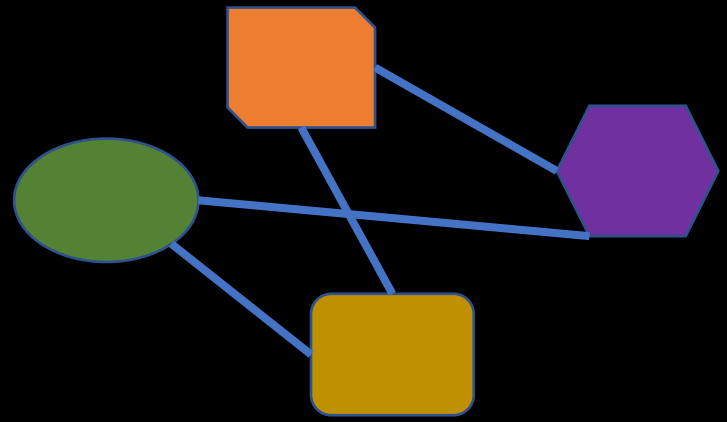


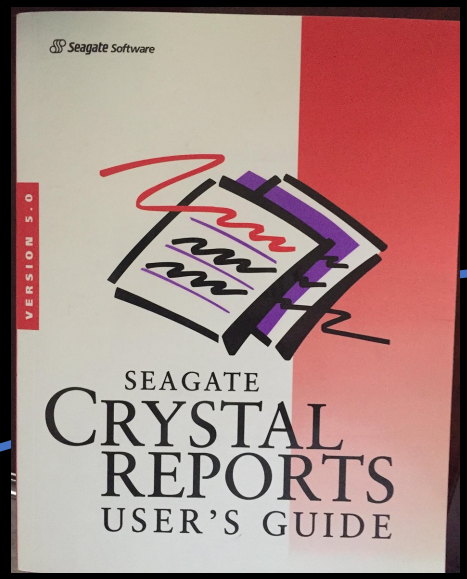
# Data Mesh – The emperor's new clothes...

Rune Ovlien Rakeie, Johan Ludvig Brattås

Data Saturday Croatia 2023

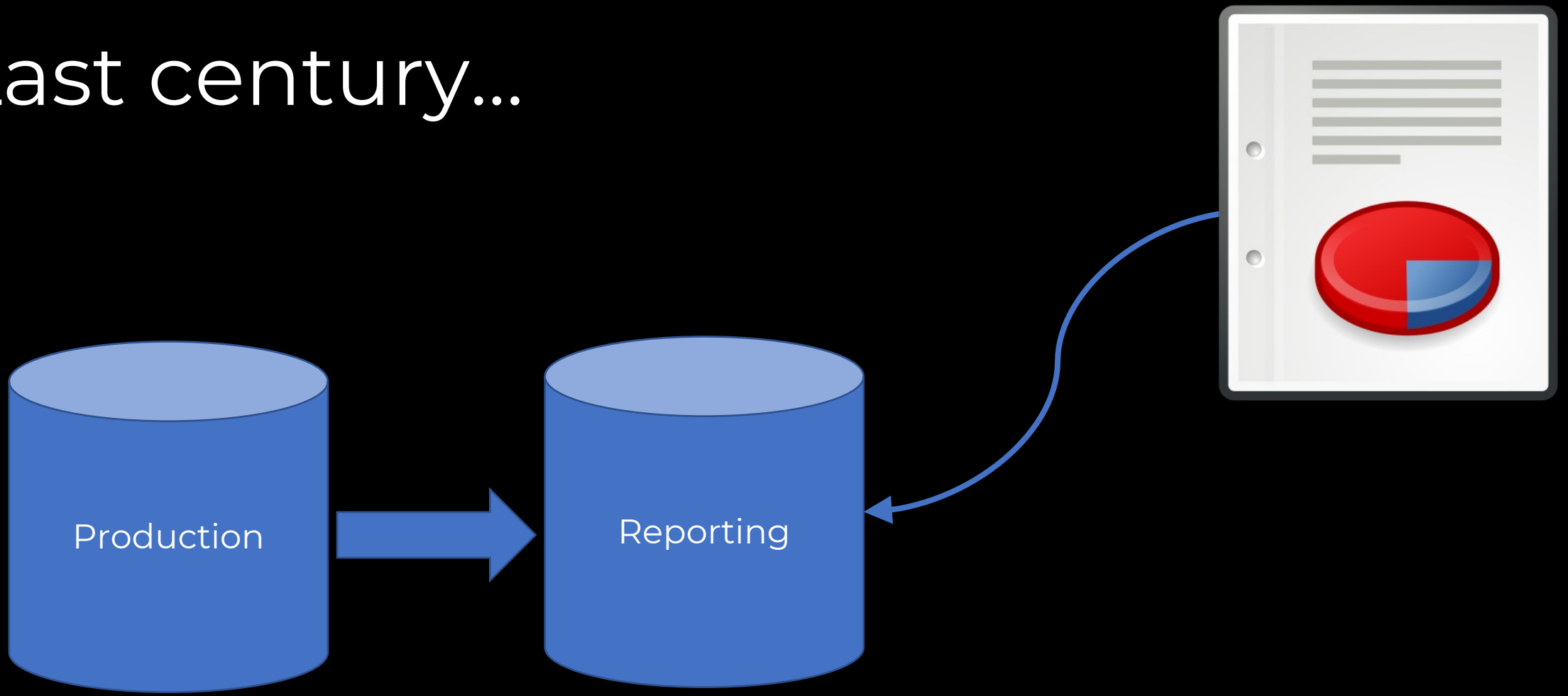
SSUGCRO

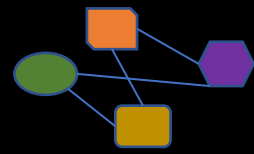
# Last century...



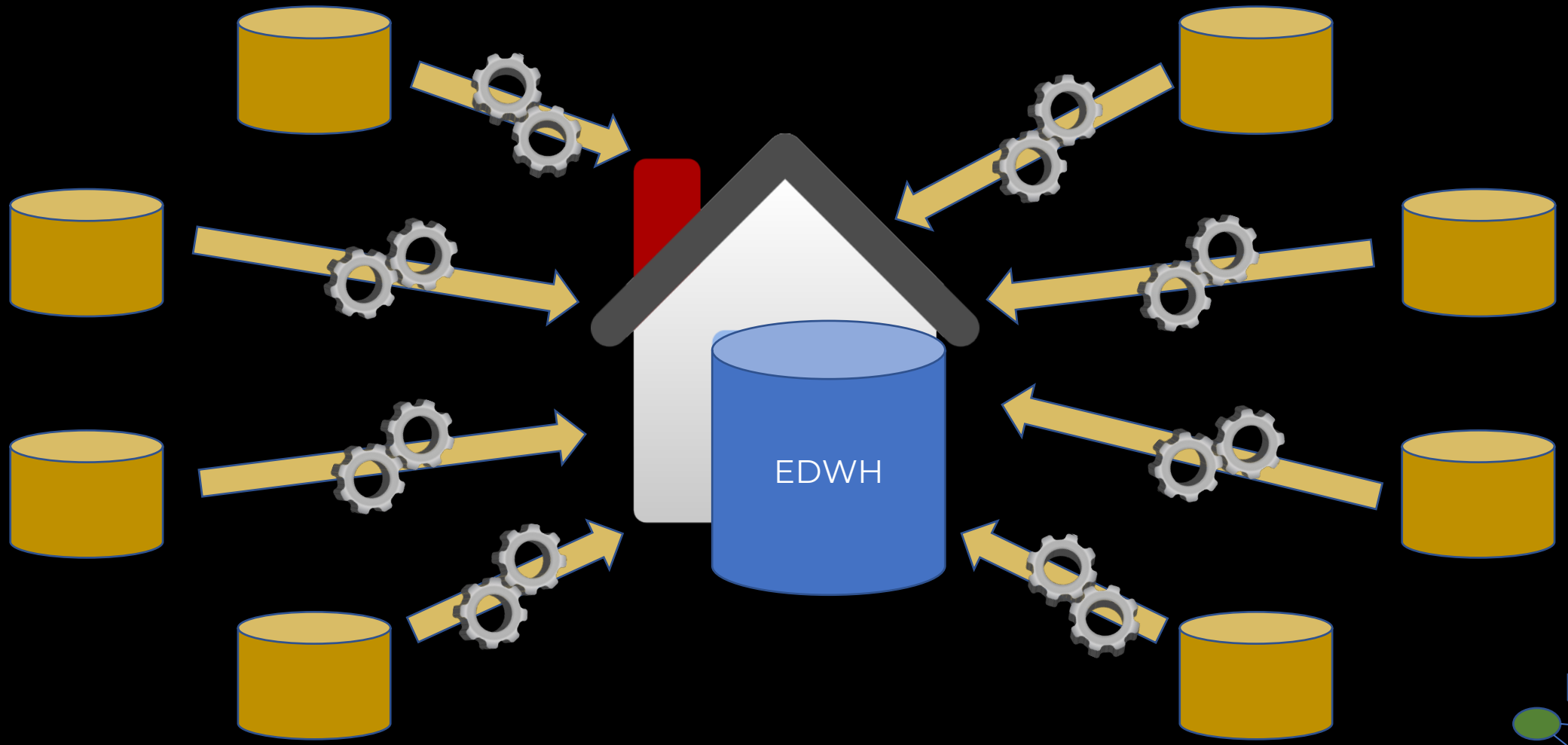

Production

# Last century...



# 1. Generation
# Enterprise data warehouse & BI



# 2. Generation
# Big Data & data lake (→ swamp)

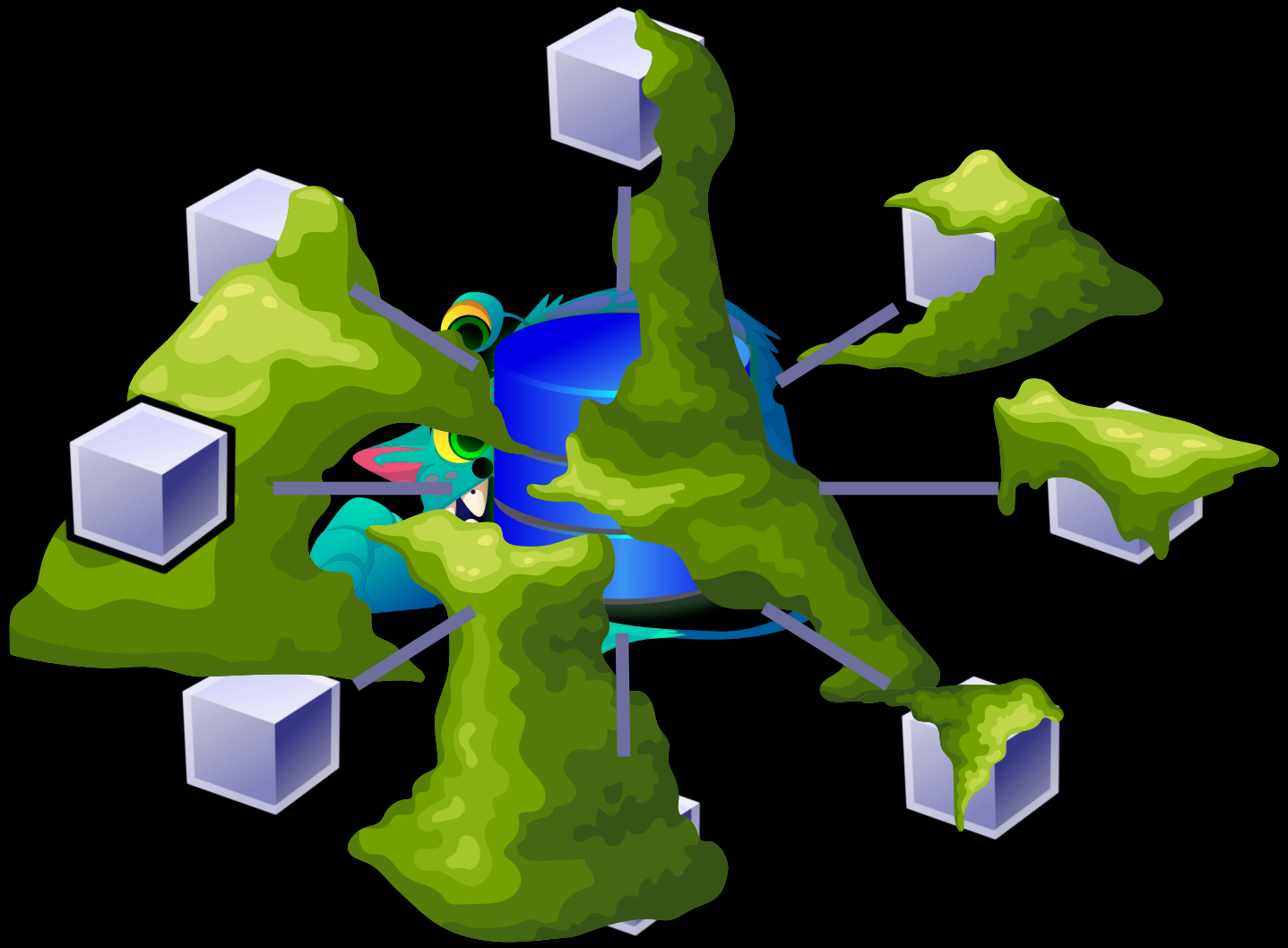


Image by valadzionak_volha on Freepik

# 3. Generation
# 2. Gen + streaming data and cloud

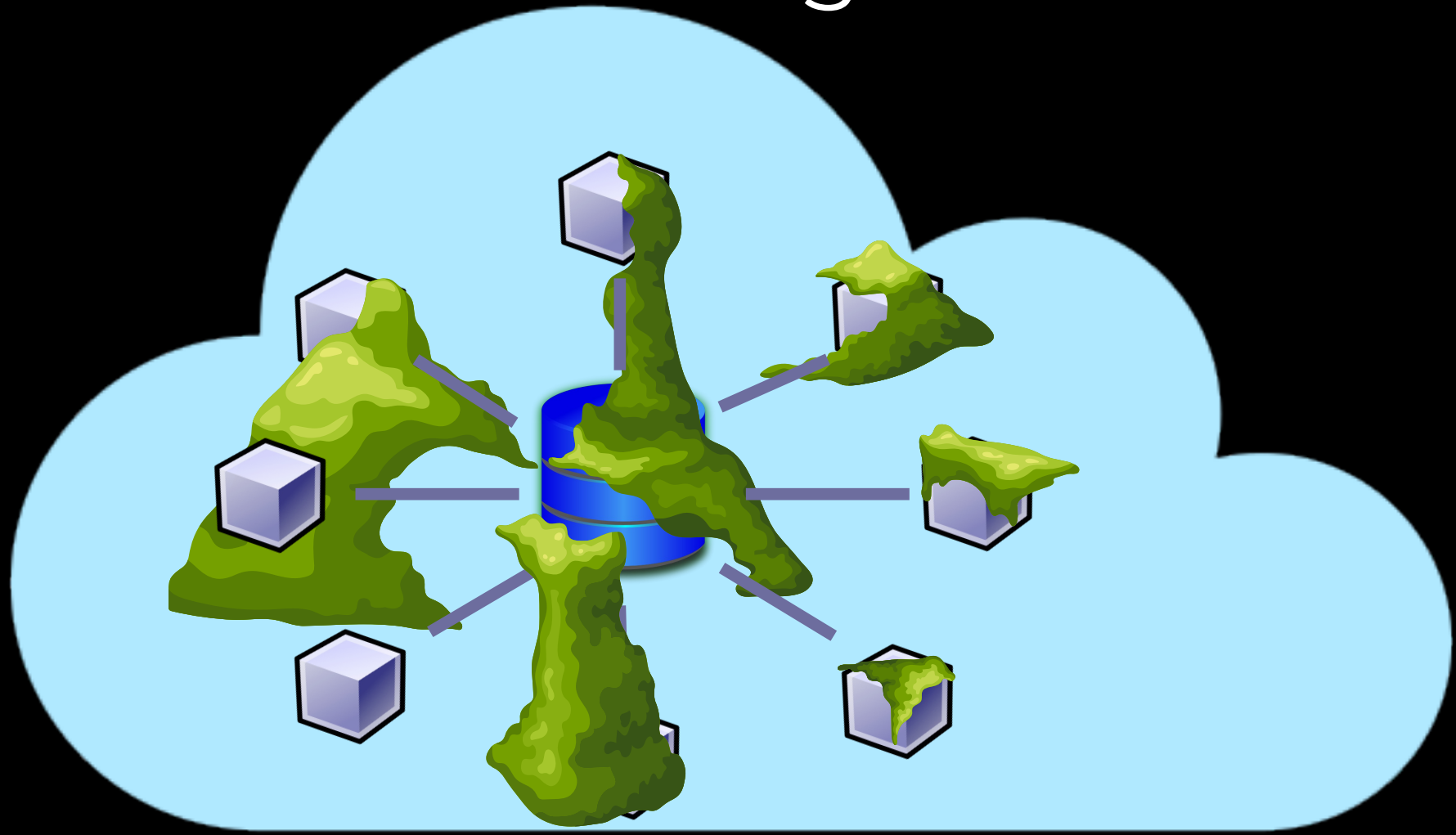


Image by valadzionak_volha on Freepik and https://github.com/maxwhoppa/tensorglow

# Data Mesh origins

How to Move Beyond a Monolithic Data Lake to a Distributed Data Mesh

(*20 May 2019, martinfowler.com*)

Data Mesh Principles and Logical Architecture

(*03 December 2020, martinfowler.com*)

Data Mesh - Delivering Data-Driven Value at Scale

*(08 March 2022, O'Reilly/Starburst Data)*

Zhamak Dehghani
Nextdata

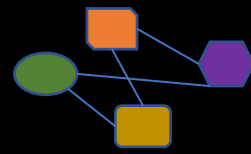
# Problems Data Mesh aim to solve

Lack of data ownership

Lack of data quality

Organisational scaling

James Serra, “Data Mesh Defined”



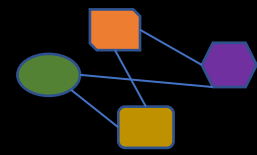
# Data Mesh Principles

Domain-Oriented Decentralized Data Ownership and Architecture

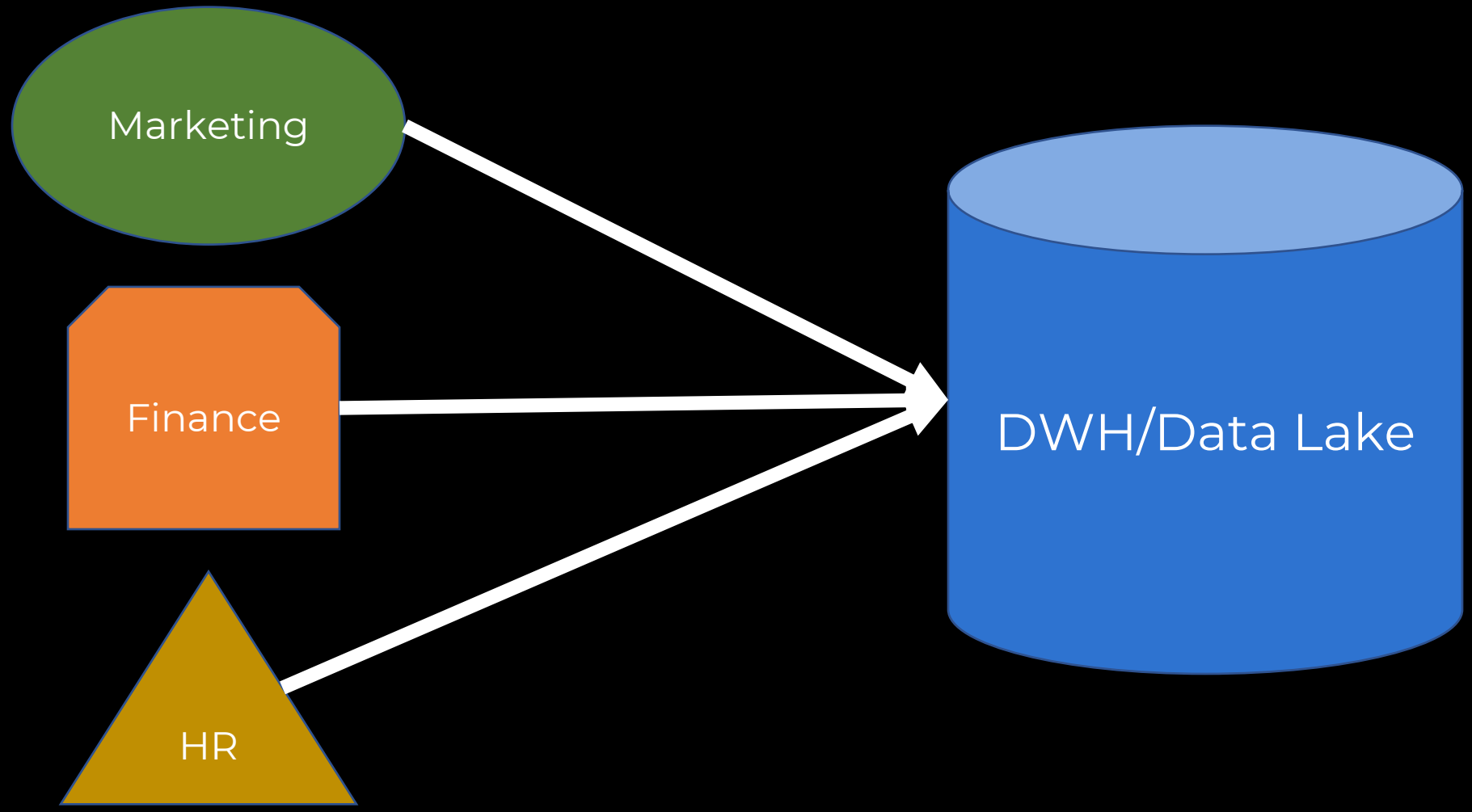
Data as a Product

Self-Serve Data Infrastructure as a Platform

Federated Computational Governance



# Domain-Oriented Decentralized Data Ownership and Architecture



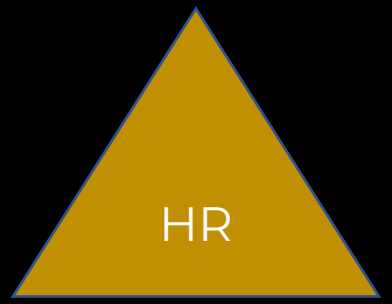
# Domain-Oriented Decentralized Data Ownership and Architecture

Domain data knowledge

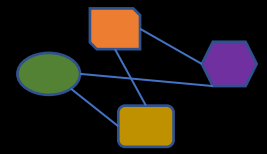
Responsible for data quality

Shift from Push & Ingest to Serve & Pull

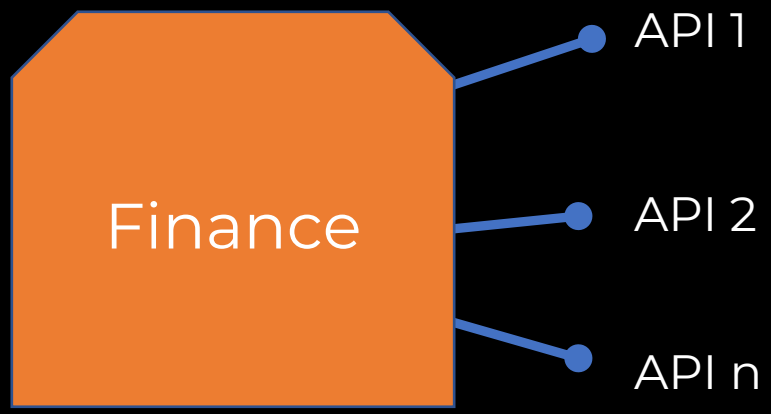




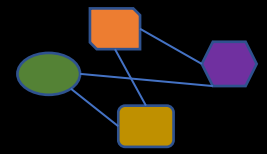




# Data as a Product



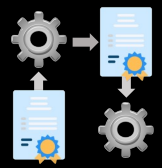

- Discoverable
- Addressable
- Understandable
- Trustworthy
- Natively accessible
- Interoperable
- Valuable on its own
- Secure



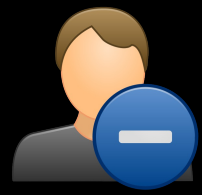
# Self-Serve Data Infrastructure as a Platform


Encryption

Schema



Data lineage



Data Access control

Monitoring/Logging

Versioning

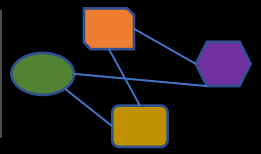
Pipeline orchestration

Big Data storage

Governance

Domain agnostic Data Infra as a Platform

**Success criteria: Lowering lead time to create a new data product**



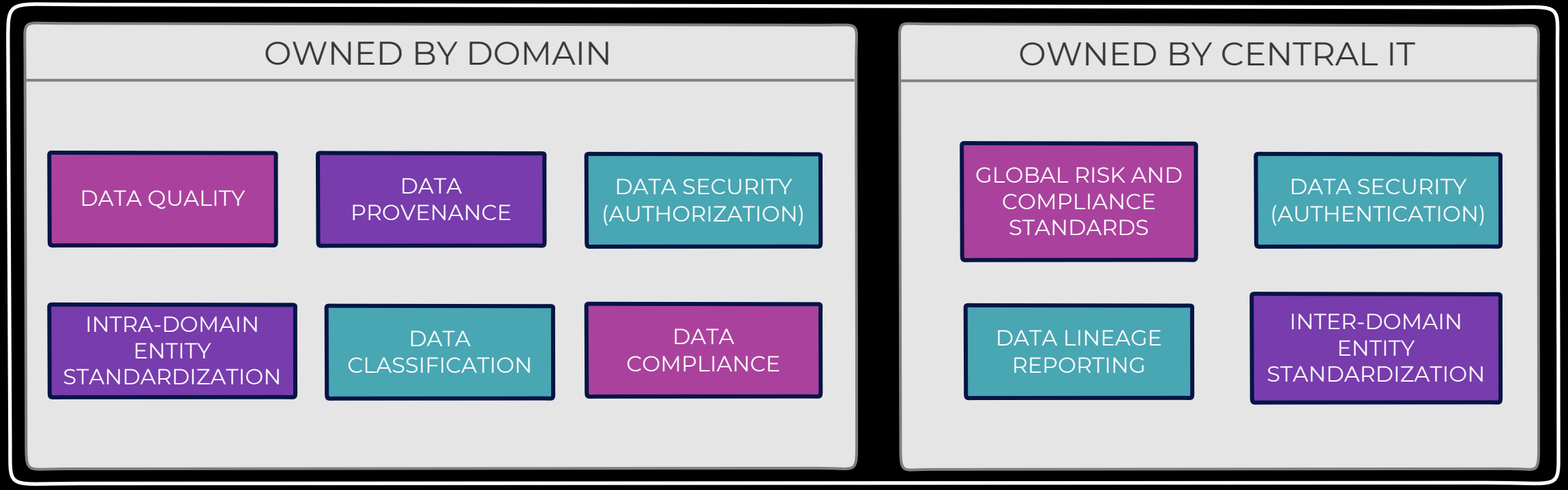
# Federated computational governance

Shared responsibility between domains and central IT

Focus on interoperability

Automatic deployment of policies

Example:




https://blog.starburst.io/data-mesh-federated-computational-governance

# Data Mesh Interplay

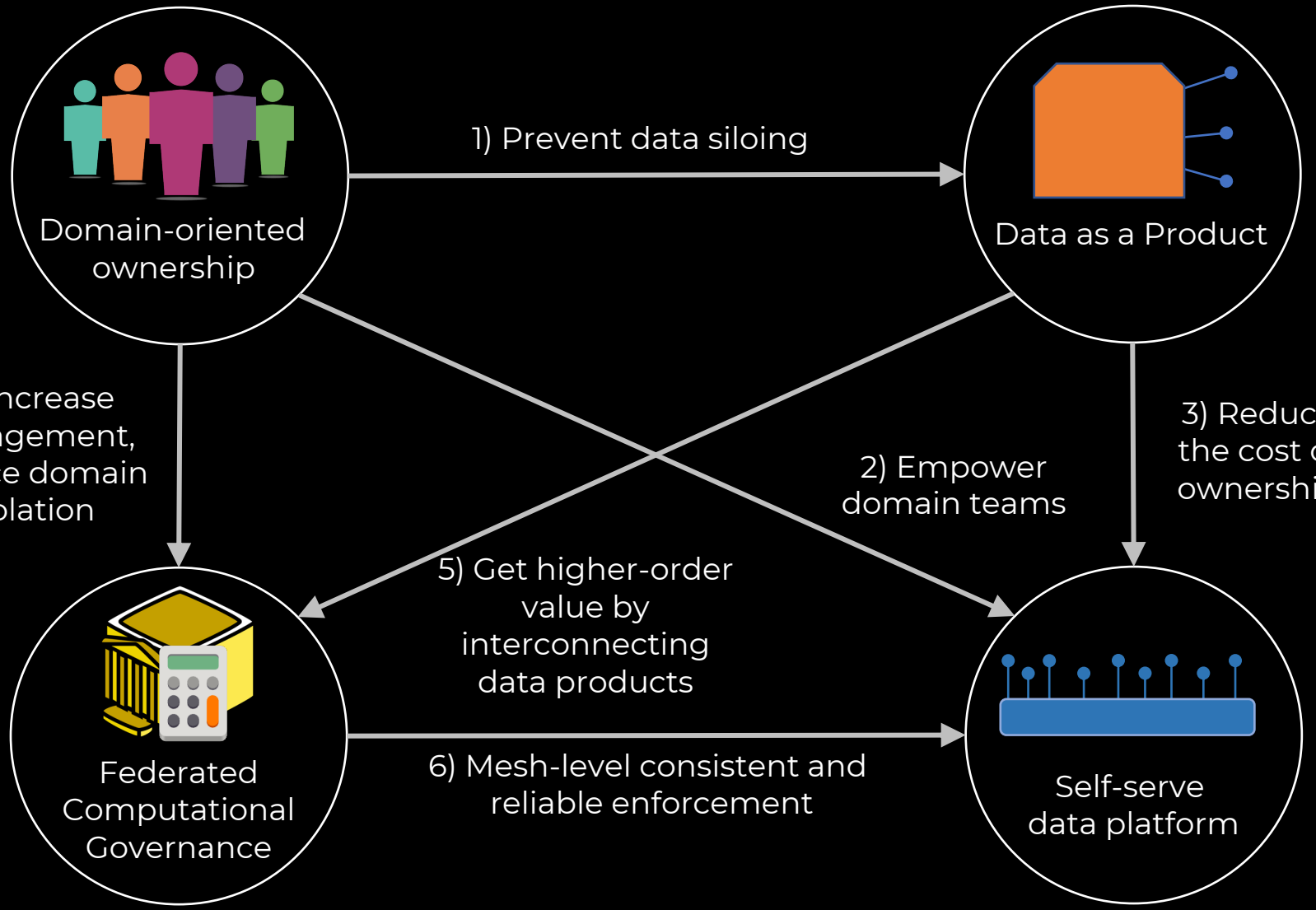
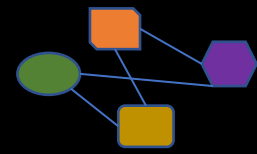



Illustration: Data Mesh - Delivering Data-Driven Value at Scale by Zhamak Dehghani

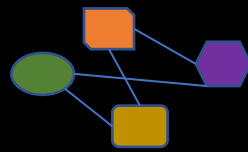
# Data Mesh paradigm shift

| | | |
|---|---|---|
| Centralized data platform | → | Ecosystem of data products |
| Extracting and loading | → | Discovering and using |
| Ingesting | → | Serving |
| Flowing data around | → | Publishing events as streams |



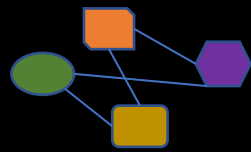
# Rune Ovlien Rakeie

*“Data Mesh is the best thing invented since sliced bread”*



# Johan Ludvig Brattås

*“Eh… 😬”*



# What if ...

...the Data Mesh concept is beating down open doors?

# The principles of the Business Data Lake

## Defined by Capgemini in 2013

1. Land all the information you can *as is with no modification*
2. Encourage LOB to create point solutions
3. Let LOB decide on the cost/performance for their problem
4. Concentrate governance on the critical points only
5. Consider the corporate view to be just another LOB view
6. Unstructured information is still information
7. Never assume the lake contains everything
8. Scale is driven by demands – scale down as well as up

# Data Lakehouse

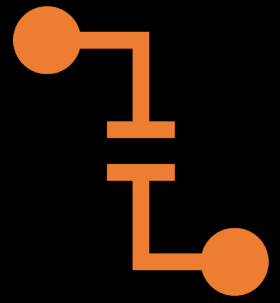
## Defined by Databricks in 2019

Features of a data lakehouse:

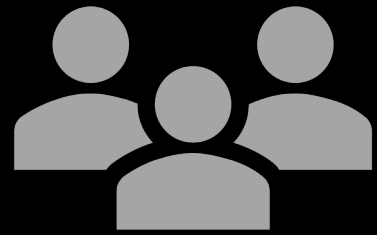
- Transaction support
- Schema enforcement and governance
- BI support
- Storage is decoupled from compute
- Openness
- Support for diverse data types
- Support for diverse workloads
- End-to-end streaming
- Layered architecture
- Supports domain-oriented approach

images: Flaticon.com

# However...



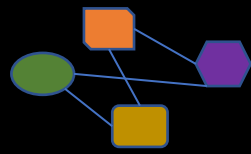
Data Mesh is less about technology



More about people and practices.

# How to build a data mesh

- Data Mesh isn’t about tech
- However – it could look something like this…



# Harmonised mesh

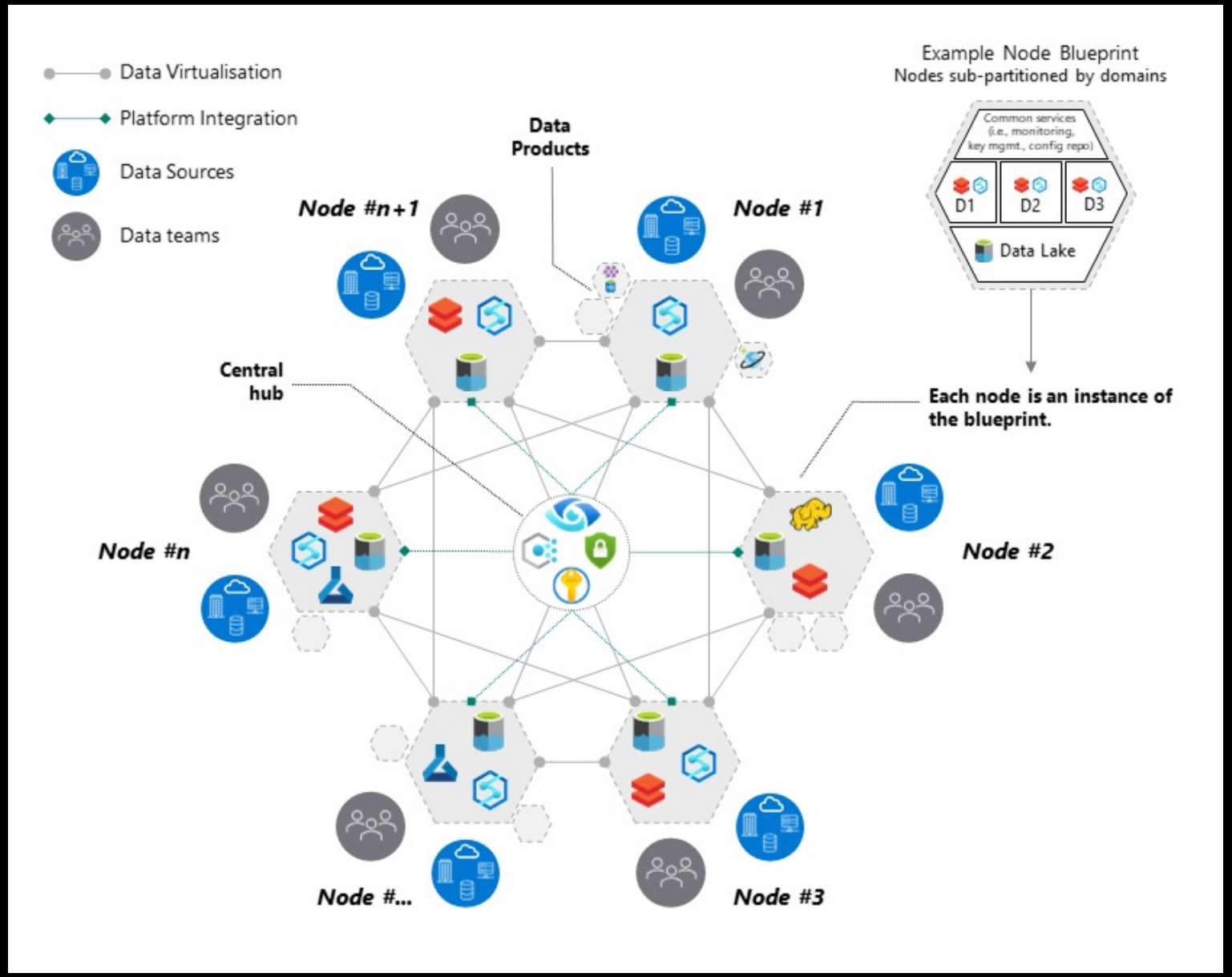



image: Piethein Strengholt

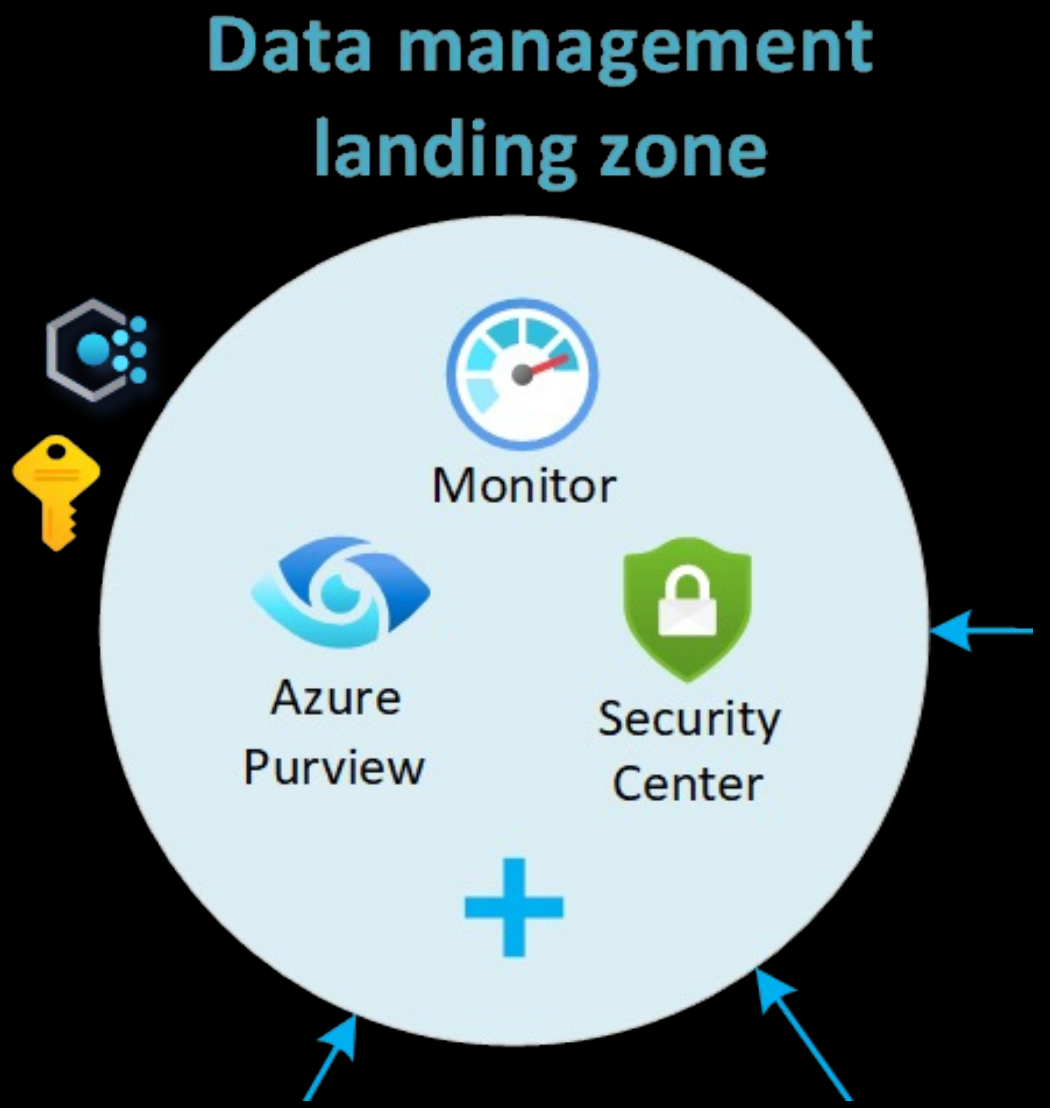
# Cloud-scale analytics

## Cloud-scale is targeting data mesh-like patterns.

| | |
|---|---|
| 5 modules | Data Management Zone |
| | Data Landing Zone(s) |
| | Data Integration – batch |
| | Data Integration – stream |
| | Data Product – Analytics & Data Science |

# Your central data hub

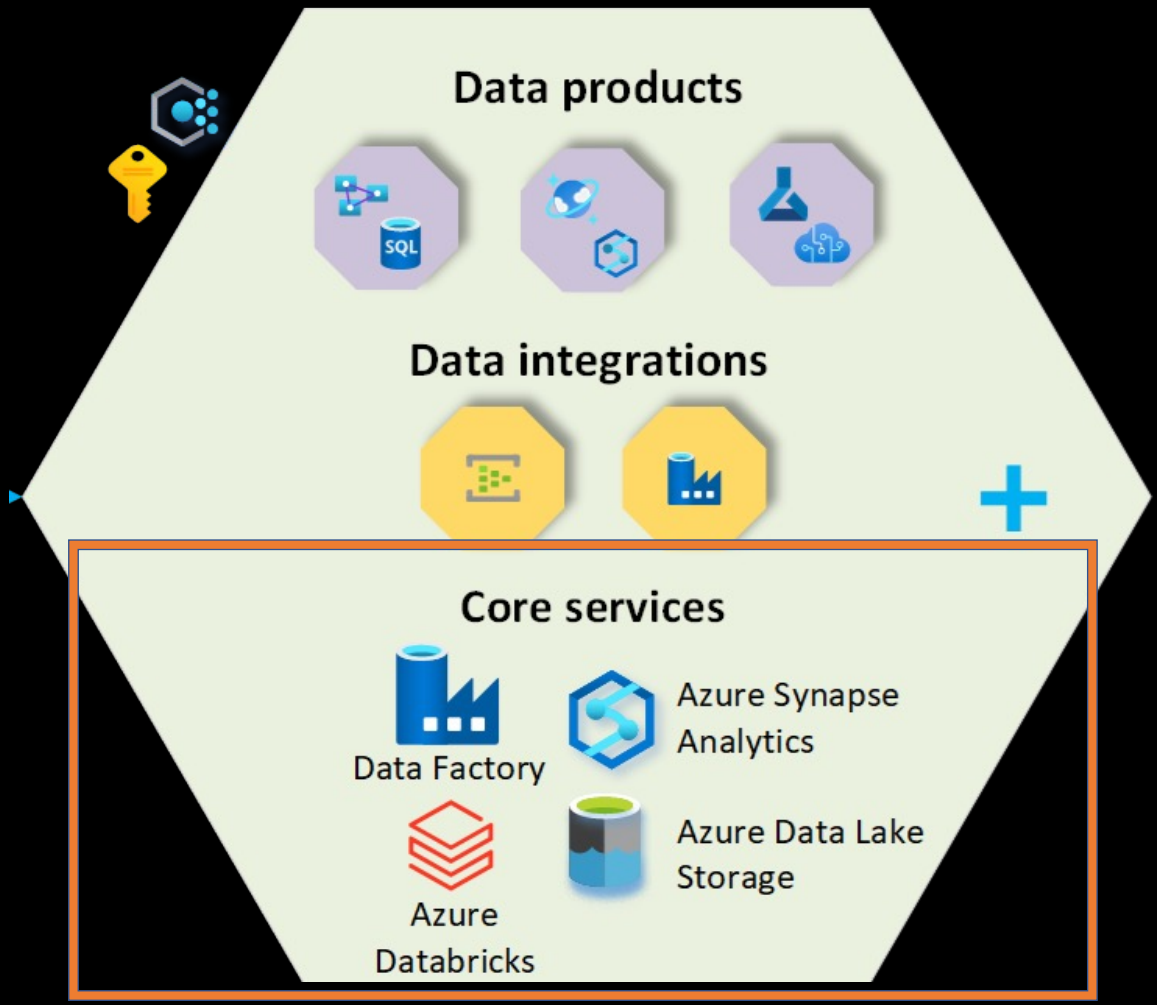
- Networking
- Central monitoring and security
- API Management
- Microservices hosting (AKS + CS)
- Purview
- Synapse Link
- Power BI link



# Data Landing Zone

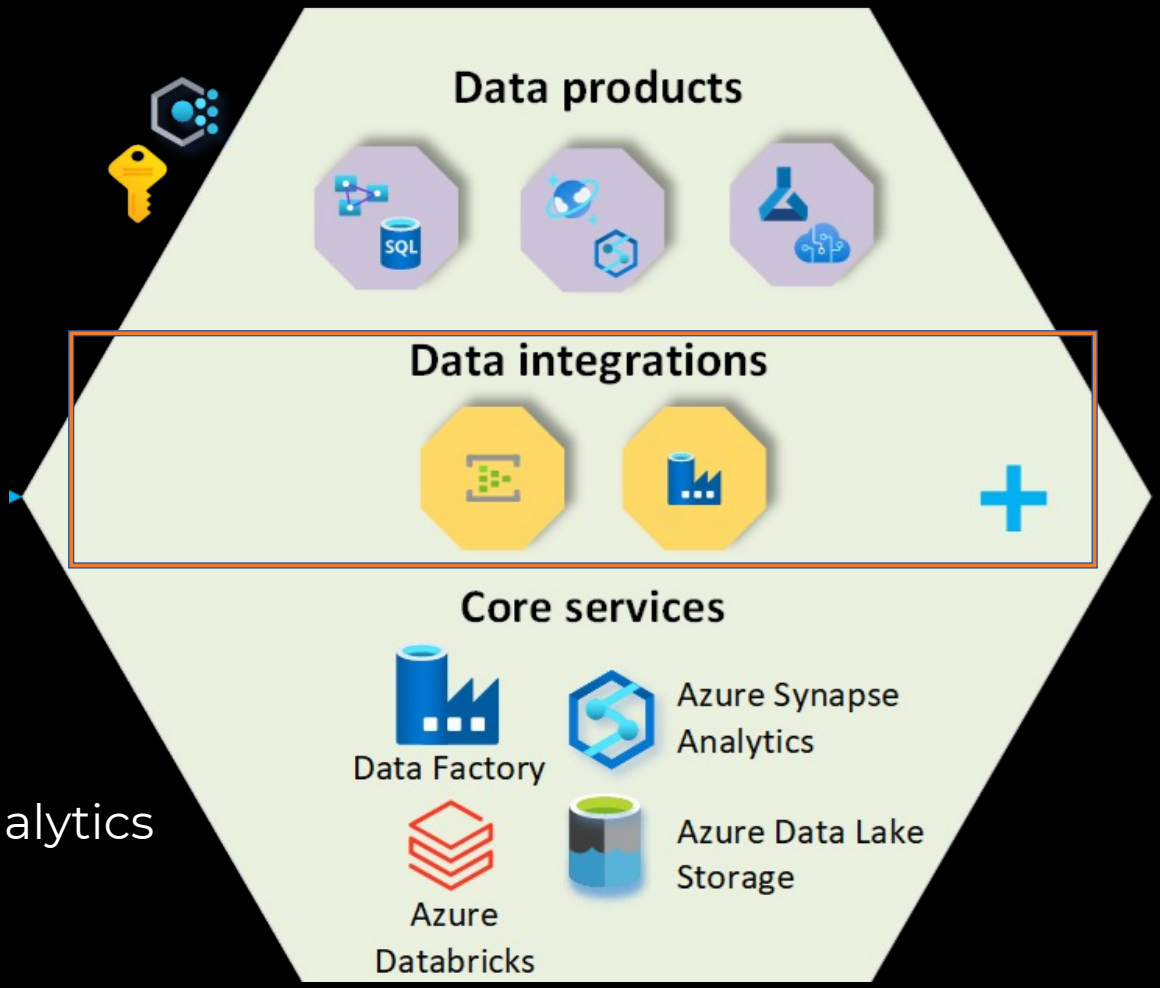
- As many as you need
- This is where your data is persisted – and workloads are executed
- Storage services
- Ingestion services
- Management services (networking, monitoring…)

- Also hosts your Integration services and data products



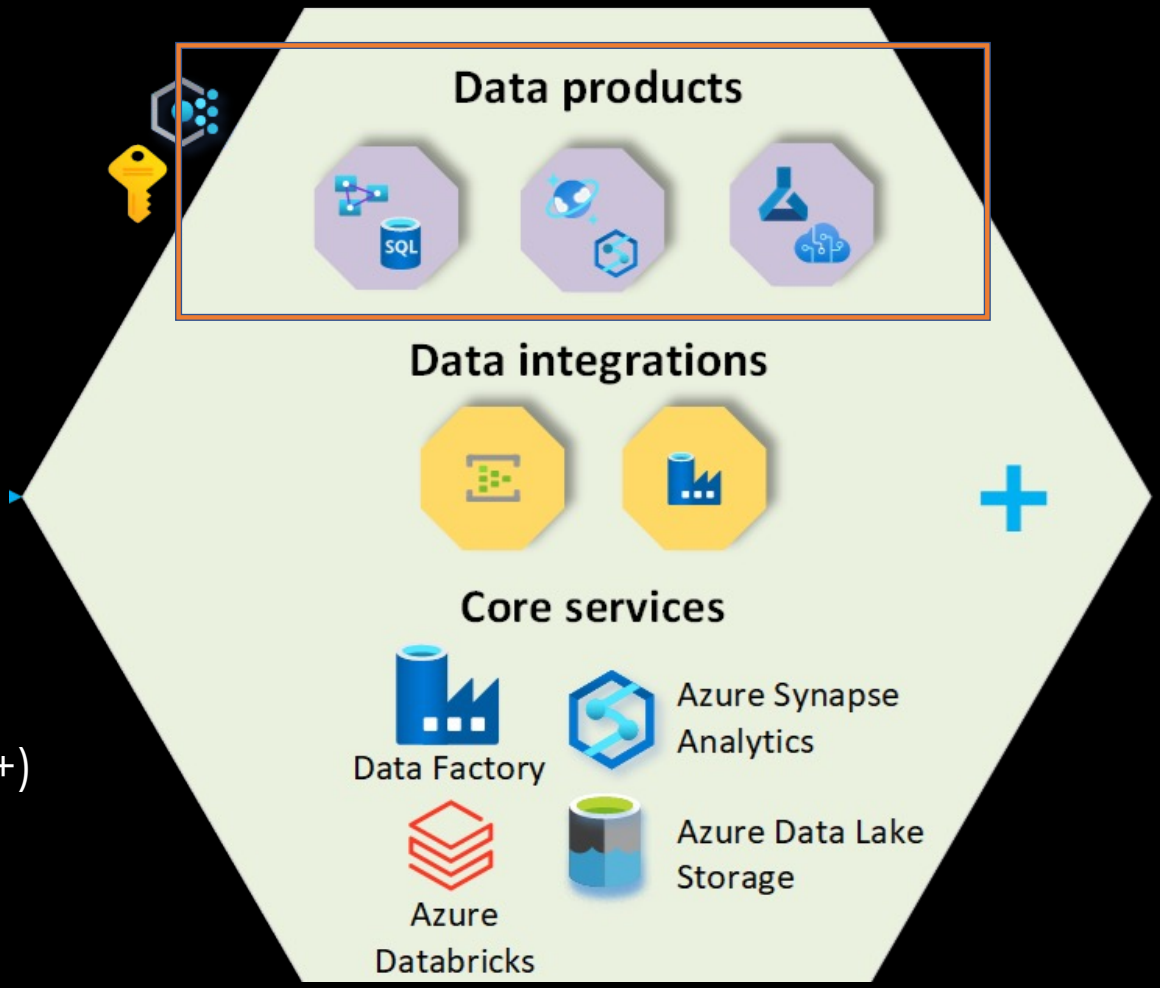
# Data Integrations - Batch & Stream

- Storage services
- Data orchestration
  - Data Factory & Event hub / IoT Hub
- Transformation
  - Data Factory/Synapse/Databricks/Stream Analytics
- Shared runtime services
- Metastores

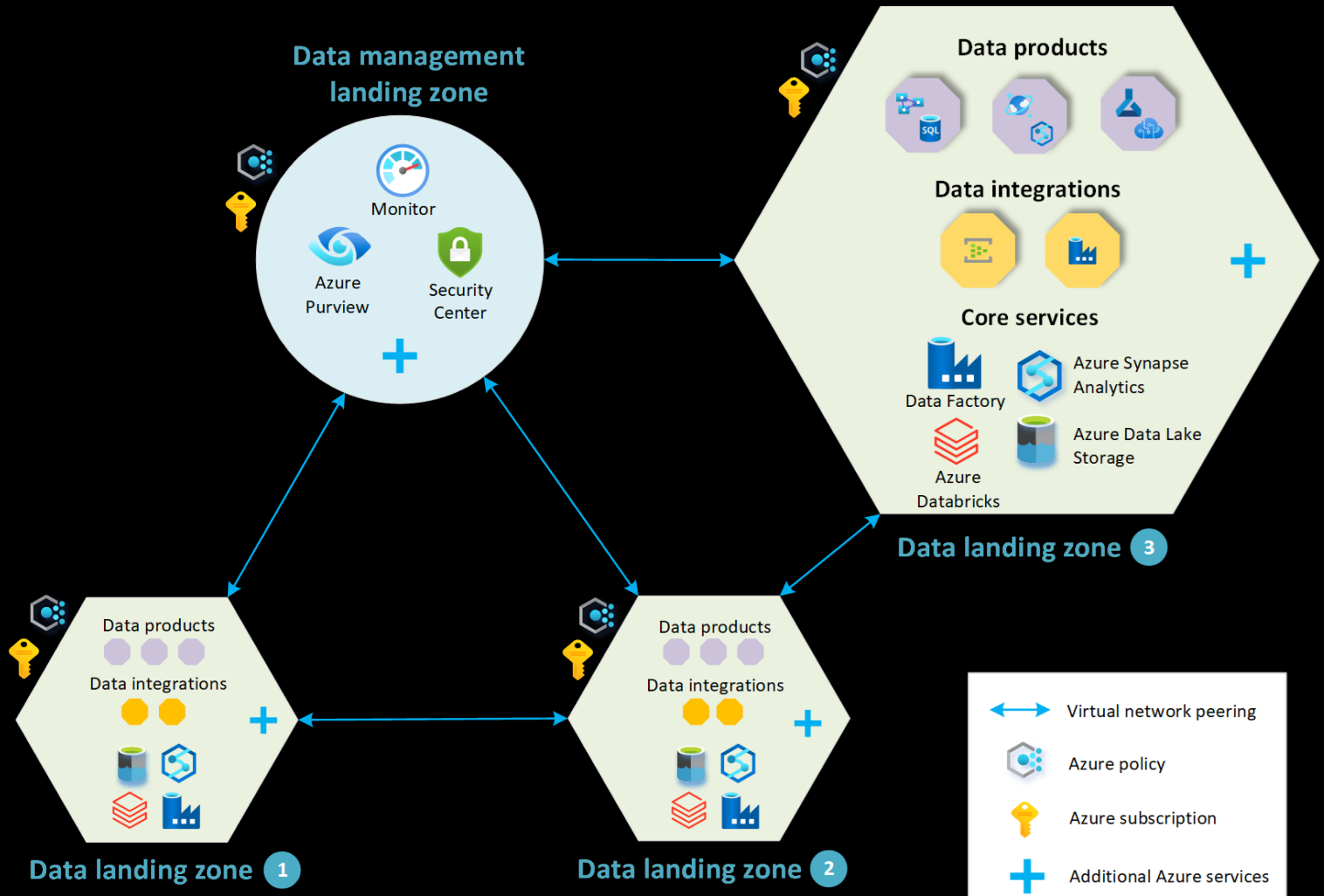


# Data Product
## – Analytics & Data Science

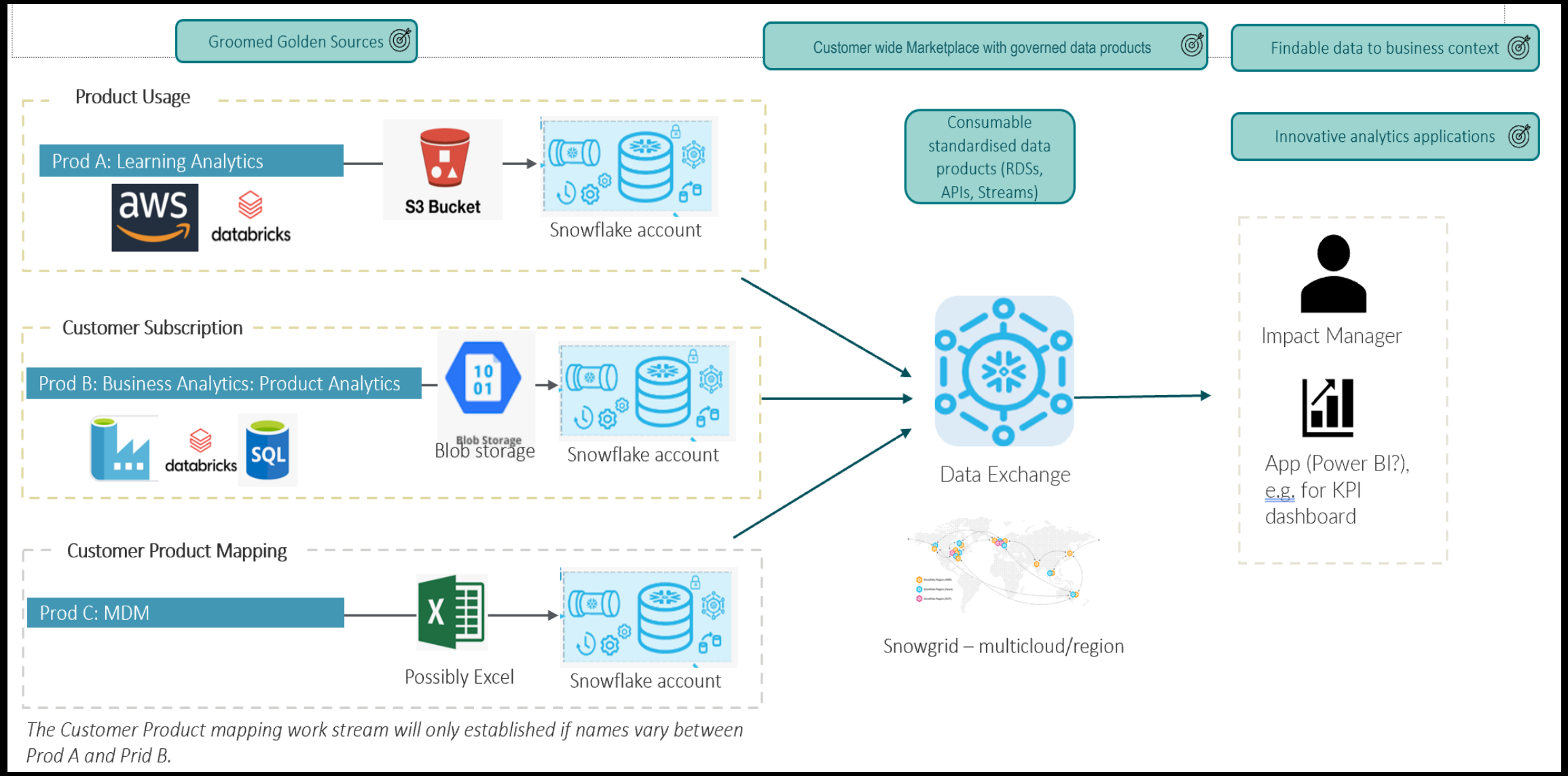
- Synapse Workspace
- Databricks Workspace
- Key vaults
- Data Science services (Azure ML, Cognitive svc ++)
- Storage account



# Cloud-Scale Analytics

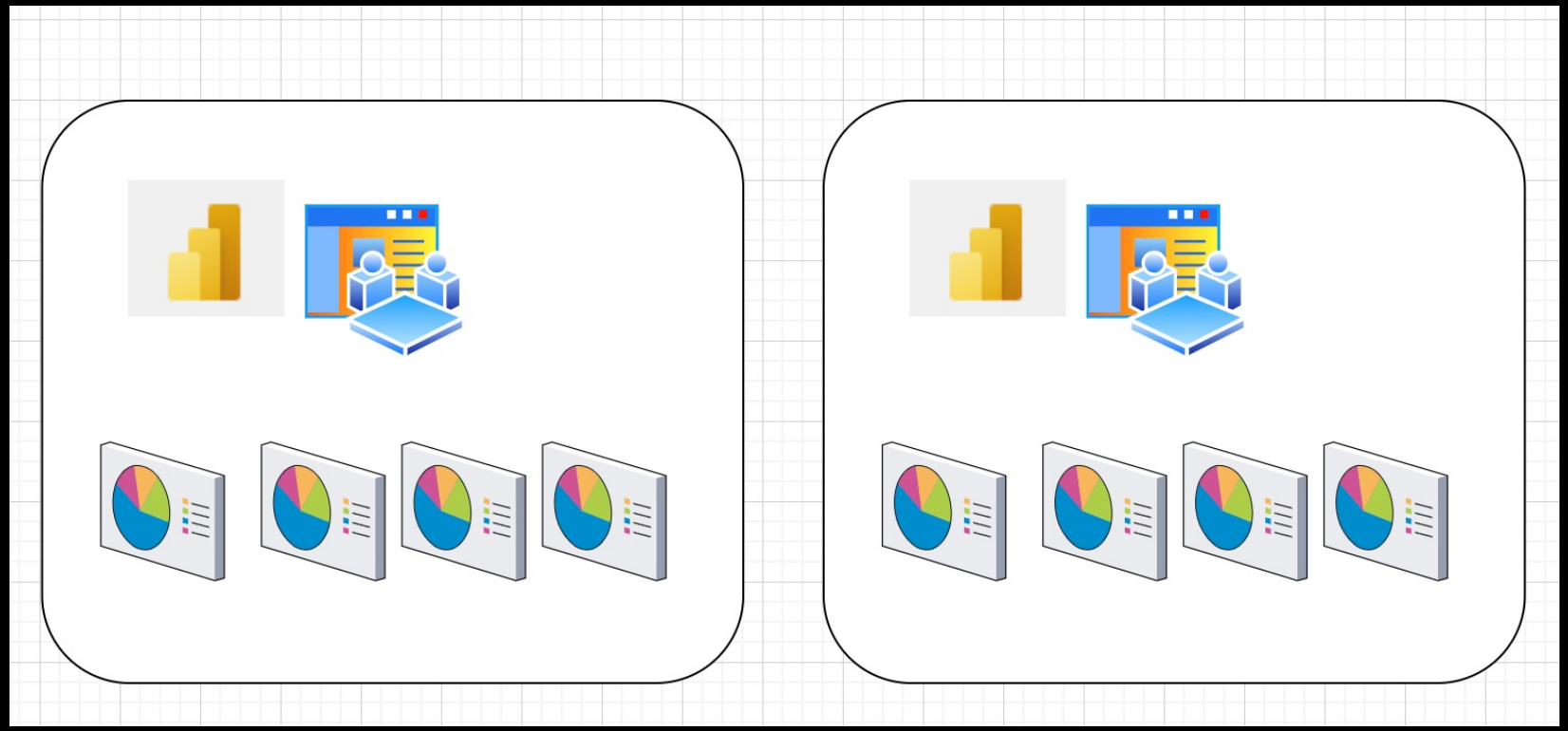


# Multi-cloud mesh




*The Customer Product mapping work stream will only established if names vary between Prod A and Prid B.*

# And what about the hottest kid on the block?



# Domains can be split in two

- Source Domain
- Consumer Domain

Not decentralized architecture.

Decentralized organization

# Source-side challenges

- The producer(s) of data products need to follow principles and guidelines. But, more importantly, they need to understand that the data product they are producing will be consumed.
- On the source data domain side, the challenge is to make developers understand the analytical purpose of data products and adopting a data engineer mindset.
- One way to assist with this, is to have a central CoE team that can assist producers analyze their data and create contracts that they can follow – that adheres to the central principles.

# Consumer-side challenges

- On the consumer data domain side, a core challenge can be to have business users and analysts understand their role. Not only consumers, but also producers and potentially owners of data products.

- Having analysts gain a data engineer mindset and taking ownership of the products they build, is usually an organizational challenge.

- Maintaining these data products over time can be another challenge. In particular, when consumer data products are built «on top of» other consumer data products, that are in turn built on top of source data products. Thus, forming a chain of data products, becoming more and more refined and purpose specific by each «evolution», but also dependent on previous “evolvement”.

# Contracts

# Is this for everyone?

**No**

Most likely – 80% of organizations will never need this...
Though «everyone» wants to implement a data mesh

# Considerations

Have a complex source system landscape?

Source systems are mainly microservices?

Lots of domains?

Mature, data-driven organization?

# EVENT SPONSORS, THANKS!!!

## GOLD

span

TRIA

## SILVER

bonsai.tech

## BRONZE


GETHYNELLIS.COM

unitfly

DATA SENSE
WHERE IT SPEAKS BUSINESS

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA

redgate

infobip

BUG

SSUGCRO

DATA SATURDAYS

# Have you seen a dragon?


# Help him!

# Thank you!


## Rune Ovlien Rakeie

Principal Cloud Architect
Tietoevry

in • /runeovlienrakeie

• @runeo34

## Johan Ludvig Brattås

Director
Deloitte

in • /johanludvig

• @intoleranse